TRIENNIAL REVIEW

WATER QUALITY STANDARDS

Commonwealth of Virginia

Department of Environmental Quality

Regulatory Advisory Panel Meeting

November 18, 2013

DEQ-PRO

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

WHY?

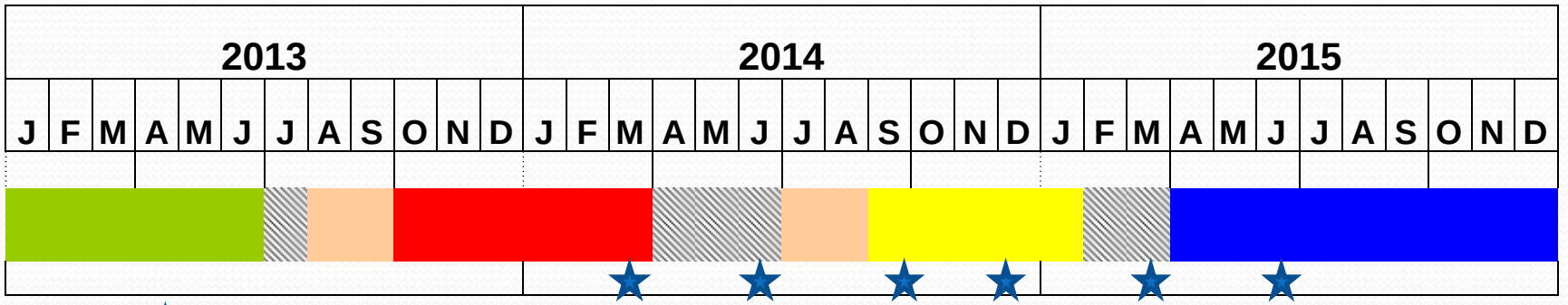
- **Federal Clean Water Act requires a review & update of Water Quality Standards every three years.**

- **Virginia's Last Triennial Review was completed February 2010**

Triennial Review used to update Water Quality Standards

- Staff input, public comment, and Advisory Panel will help identify needed amendments.
- Proposed amendments will be developed and public comments reviewed and presented to the State Water Control Board.
- Entire process takes 18 to more than 24 months.
- EPA approval required before amendments become effective

TRIENNAL REVIEW TIMELINE



Approximate time of SWCB meeting

Technical Development

DBP and Executive Review 28 Days - 14 for DPB, 14 for SNR and Gov*

NOIRA or NOPC Comment Periods

180 Days Includes Ad Hoc, Proposal Development, and go to Board

150 Days - Public Comment Review, Board Adoption

Final Stage Includes Final Publication, AGO Certification, EPA Approval

*No time limit for Gov. pre-NOPC and pre-Final stages

Triennial Review of VA Water Quality Standards

- NOIRA issued August 12
- Comment period closed October 11
- Agency background document on Town Hall
- Identified ~ 50+ issues under consideration by the agency, but we are not limited to those

Rulemaking updates/info:

www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityStandards.aspx

Revisit Left Over Issues

- **Manganese:** Natural conditions often exceed the PWS criterion (EPA disapproved previous amendment)
- **Lead criteria**: slight conversion factor adjustments to allow the lead criteria concentrations to be expressed as dissolved measurements instead of total recoverable.
- **Cadmium:** VA will consider revising the old criteria for cadmium in freshwater based on more recent data.

Manganese (Mn)

- Originated as Safe Drinking Water Act secondary maximum contaminant level for finished water
- Protect drinking water supplies from staining properties of Mn (50 ug/l)
- Expressed in WQS as total; most other metals expressed as dissolved

The Issue:

Soils & underlying geology of many regions of VA naturally high in Mn & Mn compounds

Lead (Pb)

Inclusion of conversion factor to express criteria as dissolved

Freshwater		Saltwater	
Acute	Chronic	Acute	Chronic
~~120~~ 94 WER = 1 C aCO_3 = 100	~~14~~ 11 WER =1 $CaCO_3$= 100	~~240~~ 230 WER=1	~~9.3~~ 8.8 WER=1

Cadmium (Cd)

Possible revision of old criteria for Cd in freshwater based on more recent data.

Freshwater

Acute	Chronic
~~3.9~~ 1.8 WER = 1 $CaCO_3$=100	~~1.1~~ 0.52 WER = 1 $CaCO_3$ = 100

Issues Identified by Staff

- Criteria Updates
- Recreational Bacteria Criteria
- Swamp Waters (Class VII)
- Trout Waters
- Public Water Supply
- Special Standards
- River Basin Table clarifications
- Miscellaneous Issues

Numeric Criteria Updates

EPA expects States to use the Triennial Review to update the numeric criteria to account for recent changes in science and EPA's more recent criteria recommendations.

EPA New or Revised Criteria

- Bacteria Criteria - protection of recreation (swimming)
- Ammonia Criteria - protection of aquatic life
- Copper – Biotic Ligand Model (BLM) – aquatic life
- Acrolein – aquatic life
- Carbaryl – aquatic life
- Update human health criteria based on new scientific information

New EPA Recommendation Bacteria Criteria for Protection of Recreation

- Bacteria criteria finalized October, 2012.
- Bacteria indicator species & allowable geometric mean concentrations remain the same.
- New recommendations for Statistical Threshold Value (allowable 10% excursion frequency) raised from previous “Single Sample Maximum”.
- Criterion applied during any 30 day interval.
- Implementation guidance not yet issued by EPA; due by end of 2013.

Criteria Elements	EPA Recommendation 1	Theoretical Illness Rate (STV) (36/1000 illness rate) STV same as current SSM criteria	Alternate EPA Recommendation 2	Theoretical Illness Rate (STV) (32/1000 illness rate) Slightly more stringent
Indicator (freshwater)	Geometric Mean (GM) cfu/100 ml	Statistical Threshold Value STV cfu/100 ml 10% exceedence	GM (cfu/100 ml)	STV (cfu/100 ml) (10% exceedence)
Virginia criterion E. coli	126	235 Single sample maximum (SSM)		
EPA 2012 E. coli	126	410 (STV)	100	320 (STV)
Indicator (marine water)	Geometric Mean (GM) cfu/100 ml	Statistical Threshold Value STV cfu/100 ml 10% exceedence	GM (cfu/100 ml)	STV (cfu/100 ml) (10% exceedence)
Virginia criterion Enterococci	35	104 Single sample maximum (SSM)		
EPA 2012 Enterococci	35	130 (STV)	30	110 (STV)

New EPA Recommendation Ammonia Criteria for Protection of Aquatic Life

- Final criteria recommendations published in Federal Register August 22, 2013.
- Accounts for latest toxicity data for sensitive freshwater mussels and snails.
- Criteria calculation is pH and temperature dependent.
- Usual language regarding recalculation procedure for site-specific criteria derivation, variances, revised designated uses, dilution allowances and compliance schedules.

Ammonia Criteria

Past and current EPA-recommended criteria for ammonia. Criteria expressed as total ammonia nitrogen (mg TAN/L) at pH 7 and 20°C.

Criterion Duration	1999 Criteria	2009 Draft Updated Criteria	2013 Final Updated Criteria
Acute (1-hour average)	24	19	17
Chronic (30-day rolling average)	4.5*	0.91*	1.9*
*Not to exceed 2.5 times the criterion continuous concentration as a 4-day average within a 30-day period.			
Criteria frequency: Not to be exceeded more than once in three years on average.			

Ammonia Criteria

Examples of current DEQ criteria compared to EPA (2013) criteria at pH 7 and 20°C.

	Acute (mg/L)	Chronic (mg/L)
EPA (2013)	17	1.9
DEQ (trout present)	24.1	
DEQ (trout absent)	36.1	
DEQ (early life stage present)*		4.15*
DEQ (early life stage absent)*		4.15*

*At temperatures 15° C and above, criterion same for ELS present or absent

Ammonia Criteria

Site Specific Options

EPA 2013 Site Specific Criteria Options at pH 7 and 20°C	Acute (mg/L)	Chronic (mg/L)
Unionid Mussels present Trout present or absent	17	
Unionid Mussels absent Trout present	24	
Unionid Mussels absent Trout absent	38	
Unionid Mussels present Fish ELS present or absent		1.9
Unionid Mussels absent Fish ELS present		6.5
Unionid Mussels absent Fish ELS absent		7.1

New EPA Recommendation
Copper - Freshwater Aquatic Life

- EPA recommends a "biotic ligand model" (2007) based criteria that adjusts the copper criteria to site-specific conditions.

New EPA Recommendation Aquatic Life Criteria:

- **Acrolein (biocide)**: current VA criterion = 9.3 ug/l (for human health protection)
  - criterion final in August 2009
  - Acute & Chronic for FW ALU = 3.0 micrograms/liter

- **Carbaryl (pesticide Sevin®™)**: no current VA criterion
  - criterion final in May 2012
  - Recommended = 2.1 ug/l in freshwater (acute & chronic) & 1.6 ug/l in saltwater (acute only)

Criteria (Swamps)

9 VAC 25-260-50, 390 – 540

- Designate new waters as Class VII (Swamp Waters)

Trout Waters

9 VAC 25-260-50, 370, 390 – 540

- Add, modify or delete trout waters as appropriate.
- Adjust application of temperature criteria to winter-only stockable streams during summer

Public Water Supply

9 VAC 25-260- 390 – 540

- Add, modify, or delete public water supply designations per VDH

Issues Identified Through NOIRA Comment Received

- **Revise Selenium Criteria – FW Aquatic Life**
- **Clarify SCI only for monitoring & assessment. ..not for permitting or enforcement**
- **Adopt Bromide Criterion for PWS**
- **Adopt BLM-derived Zinc criteria – FW aquatic life**

Issues Identified Through NOIRA Comment Received

- **Add definition of "pollution"**
- **General narrative criteria (9VAC25-260-20…Revise 1st paragraph to clearly require that the conditions listed there are prohibited in state waters w/o regard to causes which produce those conditions and impacts**
- **Clearly identify Antideg. implementation and incorporate into WQS regulation**

Issues Identified Through NOIRA Comment Received

- **Promulgate numeric criteria for nutrients.**
- **Address alteration of stream flow regimes through WQS regulation**
- **No human health criteria revisions based on RfDs IRIS has indicated low degree of confidence**
- **No mixing zones where T&E species present**

Issues Identified Through NOIRA Comment Received

- **Lower Cyanide FW criteria based on recent report: "Scientific Review of Cyanide Ecotoxicology and Evaluation of Ambient Water Quality Criteria: Final Report" (January 2007)**
- **Methyl mercury fish tissue criterion: evaluate for protectiveness of T&E species; not just human health**
- **Clarify special standard 'm'; effluent limitations for *Municipal* WWTF in Chickahominy above Walker's Dam**

End